

05-10-06

11:12am From-PILLSBURY WINTHROP

703-770-7901

T-087 P.007/014 F-984

VAN DER PASCH e. - 10/813,682
Attorney Docket: 081468-0308989

REMARKS

Claims 1-22 are pending. By this Amendment, claim 12 is amended.
Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Entry of this Amendment is proper under 37 C.F.R. § 1.116 as the amendment: (a) places the application in condition for allowance, for the reasons discussed herein; (b) do not present any new issues that would require further consideration and/or search, as the amendment to claim 12 merely corrects for a lack of antecedent basis caused by the previous response; (c) does not present any new claims without canceling a corresponding number of claims; and (d) places the application in better form for appeal, by removing the antecedent basis problem in claim 12, should an appeal be necessary. Entry of this Amendment is respectfully requested.

Claims 1-3 and 12-14 were rejected under 35 U.S.C. §102(b) over Hill (U.S. Patent 6,137,574). The rejection is respectfully traversed.

MPEP 2131.02 states: "The identical invention must be shown in as complete detail as is contained in the ... claim." (Citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).)

The light source 1 of Hill does not correspond to the radiation source of claim 1. The light beam 7 emitted from the light source 1 is not patterned by a patterning device, as recited in claim 1. The light beam 9 from the modulator 3 is also not patterned by a patterning device. Claim 1 also recites that the patterned radiation is projected onto a substrate. The light beam 7 from the light source 1 and the light beam 9 from the modulator 9 are not patterned, nor are they projected onto a substrate. As such, the interferometry system shown in Figure 1A of Hill, including the light source 1, does not shown the invention in as complete detail as recited in claim 1 and does not anticipate the claim.

In the event that the Examiner maintains the rejection, the Examiner is respectfully requested to point out, with particularity, where Hill discloses that either the light beam 7 or the light beam 9 is either 1) patterned by a patterning device or 2) projected onto a substrate by a projection system.

With respect to the allegations that Applicants' arguments are groundless and that Applicants have misunderstood Hill's invention, it is respectfully submitted that Applicants are well aware of what Hill's invention is. As discussed in the previous response, Hill's

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invention is an interferometer. See, for example, column 1, lines 8-11 and column 2, lines 46-48.

Applicants are also well aware that Hill discloses his interferometer for use in a lithography system. Hill discloses a lithographic apparatus in which his interferometer may be used in Figure 11A. As disclosed in Figure 11A, in the lithographic apparatus a radiation beam 1110 passes through an beam shaping optics assembly 1112. As clearly disclosed in column 71, lines 62-63, the radiation beam 1110 is, for example, an ultraviolet (UV) beam from a UV laser (not shown). Therefore, the unillustrated radiation source (i.e. the UV laser) of Figure 11A is also not configured to provide radiation in a first wavelength range and a second, different wavelength range, as recited in claim 1, and does not correspond to the claimed radiation source. The unillustrated radiation source of Hill is configured to provide radiation in one wavelength, for example the UV wavelength. As such, the lithographic apparatus of Figure 11A also fails to show the invention in as much detail as contained in claim 1 and fails to anticipate the claim.

The Examiner's comments regarding the preamble of the claim are not understood. Applicants are not relying on the preamble as either an intended use or for any structural limitations. The Examiner's conclusion that limitations recited in claims 1 and 12 "stand alone" and "are anticipated by Hill's interferometry system" are incorrect. As discussed above, and in the previous reply, none of Hill's embodiments of his interferometry system disclose or suggest a radiation source configured to provide radiation in a first wavelength range and a second, different wavelength range. None of Hill's interferometry system embodiments disclose or suggest a patterning device that patterns the radiation, or a projection system that projects the patterned radiation onto a substrate.

Should the Examiner maintain the rejection, Applicants respectfully request that the Examiner point out, with particularity, where any of Hill's interferometry system embodiments (disclosed in Figures 1A-10) include 1) a radiation source configured to provide radiation in a first wavelength range and a second, different wavelength range, 2) a patterning device that patterns the radiation, and 3) a projection system that projects the patterned radiation onto a substrate.

Claims 2 and 3 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claim 1 and for the additional features recited therein.

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Claim 12 recites a device manufacturing method including providing radiation in a first wavelength range and at a second wavelength range. The second wavelength range is different from the first wavelength range. The method further includes patterning the radiation in its cross section and projecting the patterned radiation onto a target portion of the substrate.

As discussed above, none of the embodiments of the interferometry systems or lithographic apparatus of Hill disclose or suggest patterning radiation that is provided in a first wavelength range and a second wavelength range in its cross section and projecting the patterned radiation onto a target portion of the substrate. Accordingly, none of the embodiments of the interferometry system or the lithographic apparatus of Hill can anticipate or render obvious claim 12.

Claims 13 and 14 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claim 12 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection of claims 1-3 and 12-14 over Hill are respectfully requested.

Claim 5-8, 11, 16-19 and 22 were rejected under 35 U.S.C. §103(a) over Hill. The rejection is respectfully traversed.

Claims 5-8, 11, 16-19 and 22 recite additional features of the invention and are allowable for the same reasons discussed above with respect claims 1 and 12, respectively, and for the additional features recited therein.

MPEP § 707.07(f) states: "Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it."

It is respectfully noted that the Examiner has not provided any response to the undersigned's arguments that the Examiner has not 1) provided any basis in fact and/or technical reasoning, as required by MPEP § 2112, to rely on the theory of inherency, and 2) satisfied the requirements, set forth in MPEP § 2144.04, for relying on the rationale of the court, in particular in the decision of Ex parte Wu. In the event that the Examiner maintains the rejections, it is respectfully requested that the Examiner perform the analysis for relying on the theory of inherency set forth in MPEP § 2112 and perform the analysis required for relying on the rationale relied on by the court set forth in MPEP § 2144.04, i.e. explain how the facts of Ex parte Wu are sufficiently similar to the instant application such that reliance

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on the court's rationale is appropriate. In the absence of these required analyses, it is respectfully submitted that the rejection must be withdrawn.

The Examiner's determination that "Hill inherently encompasses all the limitations of claims 5-8, 11, 16-19 and 22, since Hill's radiation source is not restricted to one wavelength (range) only, but includes the entire wavelength from X-ray, over XUV, EUV (including 13 nm), VUV (including 157 nm to 193 nm), as well as UV (including 150 nm to 350 nm), as recited in Col.71/II.62-65 and Col. 10-13, wherein the optics for use in the respective wavelength ranges are all conventional and well known in the art, as expressly recited by Hill in Col.74/II.4-8," are not entirely understood by the undersigned. However, it is respectfully submitted that the Examiner's conclusion is incorrect, but ultimately irrelevant to the determination of patentability.

Firstly, it is respectfully noted that Applicants are not claiming a radiation source that provides radiation in the entire wavelength range from EUV to UV. Claim 1 recites a radiation source configured to provide radiation in a first wavelength range and in a second wavelength range, the second wavelength range being different from the first wavelength range. As discussed above, Hill does not disclose or suggest such a radiation source. As also discussed above, Hill does not disclose or suggest either 1) patterning radiation from a radiation source configured to provide radiation in first and second, different, wavelength ranges, or 2) projecting the patterned radiation onto a substrate.

Secondly, with respect to column 71, lines 62-65, as discussed above, Hill merely discloses that in the lithographic apparatus disclosed in Figure 11 may employ a radiation beam 1110, e.g. an ultraviolet (UV) beam from a UV laser (not shown). Hill does not disclose or suggest that the laser, which is not shown, provides radiation in a first wavelength range and a second wavelength range, which is different from the first. In fact, Hill clearly discloses, or suggests, that the laser provides radiation in only one wavelength, e.g. UV.

Thirdly, with respect to column 74, lines 4-8, Hill is describing the beam writing system 1200 of Figure 12. As clearly known to those of ordinary skill in the art, and as disclosed in column 73, 21-26, in a beam writing system a writing beam, e.g. a laser, x-ray, ion, or electron beam, marks a pattern on a substrate as the beam and/or the substrate moves. In other words, there is no patterning device in a beam writing system. In addition, Hill discloses in column 74, lines 4-8, that the write beam is a radiation beam, e.g. x-ray, UV, or visible radiation. Hill does not disclose, or suggest, that the write (radiation) beam is configured to have first and second wavelength ranges, which are different from each other.

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Fourthly, it is unclear why these claims are rejected under 35 U.S.C. § 103(a) as obvious over Hill, if, as the Examiner concludes, all the limitations of the claims are inherently encompassed (i.e. anticipated) by Hill. The Examiner's conclusion that "[i]t would have been obvious to one of ordinary skill in the art... to employ the specific optics appropriate to each respective range, in order to have maximum transmission and lithographic projection," is not understood. Applicants are not claiming "specific optics appropriate to each respective range." Claim 1 recites, *inter alia*, 1) a radiation source configured to provide radiation in a first wavelength range and in a second wavelength range, the second wavelength range being different from the first wavelength range, 2) a patterning device configured to pattern the radiation from the radiation source, and 3) a projection system configured to project the patterned radiation onto a substrate. Hill does not disclose any of these features.

Fifthly, with respect to the Examiner's determination that one of ordinary skill in the art would have been motivated to eliminate elements or steps of Hill "that are not needed," as the Examiner has not identified which elements or steps of Hill "are not needed," Applicants can not provide any meaningful response to this unfounded determination. Should the Examiner insist on maintaining this rejection, as required by MPEP § 707.07(f), the Examiner is respectfully requested to answer the substance of Applicants' arguments, by at least identifying which elements or steps of Hill that "are not needed" and would be obvious to eliminate. The undersigned would also consider it beneficial if the Examiner would read Ex parte Wu and provide an explanation of how the facts of that particular case are sufficiently similar to the instant application to justify the Examiner's reliance on the court's rationale. In the absence of any such explanations, it is respectfully submitted that the rejection must be withdrawn.

Sixthly, with respect to the Examiner's arguments on page 12 of the Office Action, it is again respectfully noted that Applicants are not claiming a single light source that covers the wavelengths from EUV, VUV, UV to the visible, as alleged by the Examiner. Applicants are claiming a radiation source configured to provide radiation in a first wavelength range and in a second wavelength range, the second wavelength range being different from the first wavelength range. The Examiner's arguments regarding the "light source recited in set.[0020]" are not understood as Applicants do not disclose any particulars regarding their light source in paragraph [0020] of the instant application. However, to the extent that the Examiner's comments regarding such a light source not being "at all better, if not inferior, to

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Hill's" are directed to the claimed radiation source, the Examiner is respectfully requested to keep such comments to himself. The Examiner is also respectfully invited to review MPEP § 707.07(d), which cautions that "[e]verything of a personal nature must be avoided."

Reconsideration and withdrawal of the rejection of claims 5-8, 11, 16-19 and 22 over Hill are respectfully requested.

Claims 4, 9, 15 and 20 were rejected under 35 U.S.C. §103(a) over Hill in view of Li (U.S. Patent 5,926,298) or Kawakubo (U.S. Patent 6,219,130) or Tenimoto et al. (U.S. Patent 4,870,452) or (Nishi (U.S. Patent 5,138,176) or Nakagawa et al. (U.S. Patent 5,184,196) or Nara et al. (U.S. Patent 5,850,279). The rejection is respectfully traversed.

MPEP § 707.07(d) also states: "A plurality of claims should never be grouped together in a common rejection, unless that rejection is equally applicable to all claims in the group."

It is respectfully submitted that the Examiner's determination that each of claims 4, 9, 15 and 20 are obvious over Hill in view of either one or more of six different references is clearly improper. The rejection presents dozens, if not hundreds, of combinations against each claim. In the event that the Examiner maintains the rejection, it is respectfully requested that the Examiner particularly apply each reference against each claim so that Applicants are not required to guess which reference, or combination of references, is considered applicable against each claim.

With respect to Li, it is respectfully re-submitted that Li is non-analogous prior art. It is respectfully submitted that as Li has been specifically applied against claims 4 and 15 (on page 7), and as the Examiner has not identified any other of the five references as being applicable to claims 4 and 15, the other references are not "still applicable" to reject claims 4 and 15.

The Examiner is respectfully requested to explain how Li is analogous prior art. In particular, it is respectfully requested that the Examiner explain how Li is either in Applicants' field of endeavor, or how Li is reasonably pertinent to the problems with which Applicants were faced. It is respectfully submitted that the Examiner's citation to column 5, lines 2-10, of Li for the proposition that Li discloses a light source having two wavelengths that are used for different purposes is insufficient to establish a *prima facie* case of obviousness. If the "different purposes" for which Li allegedly uses the two wavelengths do not correspond to the features recited in claims 4 and 15, Li's combination with Hill, and/or

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any of the other five references, will not include all the limitations of claims 4 and 15 and will not present a *prima facie* case. See MPEP § 2143.

Reconsideration and withdrawal of the rejection of claims 4, 9, 15 and 20 over Hill in view of the applied second prior art reference are respectfully requested.

Claims 10 and 21 were rejected under 35 U.S.C. §103(a) over Hill in view of Stryer et al. (U.S. Patent Application Publication 2002/0064796 A1). The rejection is respectfully traversed.

Claim 10 and 21 recite additional features of the invention and are allowable for same reasons discussed above with respect to claims 1 and 12, respectively, and for the additional features recited therein. In addition, it is respectfully submitted that Stryer et al. fail to cure the deficiencies of Hill with respect to claims 1 and 12, and even assuming it would have been obvious to combine the references, such a combination would not result in the inventions of claims 1 and 12.

Reconsideration and withdrawal of the rejection of claims 10 and 21 are respectfully requested.

Claim 1 was rejected under the judicially created doctrine of obviousness-type double patenting over claim 1 of U.S. Application 10/792,909 (U.S. Patent Application Publication 2005/0110965 A1). Claim 2 was rejected under the judicially created doctrine of obviousness type-double patenting over claim 1 of U.S. Application 10/925,214 (U.S. Patent Application Publication 2005/0078292 A1). The rejections are respectfully traversed.

It is respectfully noted that the Examiner has not provided any response to Applicants' traversals of these rejections, as required by MPEP § 707.07(f). As such, it is respectfully submitted that no further response is necessary to address these improper rejections.

In view of the above amendments and remarks, Applicants respectfully submit that the all the claims are allowable and that the entire application is in condition for allowance.

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Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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